Information Organization and the Mysterious Information User

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For the whole of the last four hundred years—the modern period—those in the chief expressions of what we might call the information service professions—bibliography, librarianship, indexing, documentation, computerized information storage and retrieval, archives, records management, and museum work—have made it their business to aggregate informational objects (or their surrogate descriptions) in such a way as to help people (information users) identify, gain access to, and interact with them. These actions have led to the creation of systems organizing both discrete informational objects and portions (often even snippets) of the objects.

During my career I have studied and written about many such systems. My method had been to focus especially on how essential concept words and terms (e.g., "information users") have been used (i.e., to what did they refer, what roles have they played) and how their uses and what they referred to have changed over time. This led me in the early 1980s to investigate the sources of particular ideas in Charles Cutter's subject access work and in the work of those who followed him in incorporating subject heading systems in the dictionary catalog.[1] Afterward, I applied the same methods to the idea of "classification" across several fields, to the idea of "library and information science," and to "information organization" as a general concept.[2]

During the same period I had many occasions of considering the concepts of information users and use, the natural complement of information systems themselves, but I have not written extensively about them.[3] Thinking through such concepts immediately brings one face to face with many heady questions. For example, how might we characterize information users and the use or uses to which informational objects might be put by those people? How have these people been characterized and described in the past and present, and under what circumstances have they been characterized in one way or another?

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When, for example, did the practice arise of calling them "information users" and their interaction with the information objects "information use"? What broader social and cultural phenomena can be correlated with the conceptualizations, and what tentative conclusions can one draw from what is discovered?

The purpose of this essay is to bring together my thoughts on information users and use. These will be presented chiefly in the form of a historical survey of how reference to information users (and, by implication, information use) has changed over the modern period in history (beginning at about A.D. 1500) and up to the present. Before attempting to address such characterizations I will comment on both the timeframe involved and the words of my title. Afterward I will summarize what I have covered and provide some broader suggestions about the matter.

Preliminary Comments

It has become a commonplace opinion recently that consideration of information users and use not only is relatively recent but also is the cause of creating two main subfields in the information studies field that, according to some, represent a fundamental split in the field. Tefco Saracevic, for example, in a series of writings that began in 1991, concludes that our field has come to have two primary focal points or subdisciplines, one focused on information system making, the other on information users and use. He claims that the systems emphasis, under the name "information retrieval," was the original center of the field, that it began with Vannevar Bush's article in 1945 entitled "As We May Think," and that it is the most robust portion of the field. He identifies the 1970s and 1980s as the time in which user studies began. Claiming support from White and McCain's 1998 cocitation analysis of the 120 most cited authors of the field, he concludes that these two elements of the field barely overlap or communicate with each other (much to their respective losses), and if someone were to find a way to unite them, he or she would, so to speak, go down in history as a hero.[4] Douglas Raber, in contrast, finds the two realms so different in their views of the underlying phenomenon of information and so different in their approaches to research that they have generated an almost unbridgeable split in the field.[5]

Some have disputed the beginning date for this rise of interest in users. Marcia Bates, for instance, claims that concerns about users can be found back to the 1960s, at least among information scientists. And

T. D. Wilson, a strong proponent of user studies, has claimed since 1981 that user studies can be dated from the 1948 Royal Society Conference on Scientific Information.[6] However, all such attempts to locate the beginnings of concerns about users in the recent past are misleading. In reality, treating information users and use as possible or actual objects of study goes back at least to the period between the two twentieth-century world wars. And general reflections on information users, apart from specific proposals to study such issues, go back nearly to the beginning of the modern period of history in the West (i.e., the 1500s), although they took on a more explicit and discriminating cast only after the mid-nineteenth century. There is a very natural reason why concerns about users go back so far. Users always have been a part of the consideration for making information organization systems because the very justification for making such systems is rooted in information users in one way or another.

One final point to be made on the arena of this subject has to do with my use of the word "mysterious" in this essay's title. I do not use the word to refer to some quality of eeriness or of the supernatural or of the suprasensory. Here the word "mysterious" has to do with vagueness in how we as professionals have conceptualized and spoken of users when attempting to think and talk about them, especially when we identify classes of such people and classes of information use in the contexts of our systems, of their use of the informational objects in our systems, and of their use of information in general. They are akin to the "implicit, shadowy figure" that Norman Roberts found in his search for "information man," his analogical parallel to the idea of economic man as found among economic theorists.[7]

I will divide my consideration of conceptualizations of users and use into three periods: first, from the beginning of the modern era in the fifteenth and sixteenth centuries to the end of the eighteenth century; second, from the beginning of the nineteenth century to the end of World War I (about 1920 or so); and third, since the 1920s. The first covers the modern beginnings of machine-replicated informational objects in society in the form of "the book" (I along with others use that phrase in a broad sense, the printed volume of text standing metaphorically for printed publications of all kinds). The second covers the beginning of the more recent rapid ascent of such objects and the systems that organize them to a position of dominance in society. And the last covers not only the more recent extraordinary expansion of informational objects and organization systems in society but also the attempts to formally study and characterize information users and use.[8]

Information Users and Use before the Nineteenth Century

The initial period in the search for characterization of information users stretches from the beginning of printing in the 1450s to about 1800, nearly 350 years. It is the least informative period for our task because the widespread use of machine-replicated information objects in the form of the book was only beginning to occur. Toward the end of this period a number of comments began to appear about the growth of human knowledge in this new way and the potential this had for society, but for the most part people involved with the book were more focused on the fact that it existed at all and on its general relationship to the growth of human knowledge than on any fine distinctions about its users and uses.

During this period the book advanced in form so that by the seventeenth and eighteenth centuries the printed monograph was joined by experiments with newssheets, newspapers, journals, periodicals, and anthologies. Likewise, the content of the printed book expanded enormously to include a broad range of subject matter notably associated with the general advance of knowledge and more particularly associated with the initial rise of modern subject areas of thought, with the initial rise of modern science and applied knowledge, and with the beginning of the modern proliferation of imaginative literature.

By the end of this period only two of the modern traditions of information organization had come into existence, the first and dominant form being bibliography (not named as such until the end of the eighteenth century), the practice of making separately published lists of books and other writings (i.e., bibliographies); the second, less developed and in many cases technically deficient form was library cataloging, the practice of making lists of books and other writings contained in one particular place or agency (i.e., library catalogs).

As for users of the book and of organization systems such as bibliographies and library catalogs, only the most general kind of conclusions can be drawn. First, despite the growth of recorded knowledge and the expression of that knowledge in an expanding array of printed forms, and despite utopian-flavored expressions of the value of the book and the knowledge it held for society in general and for the general populations of nations (many such expressions occurred during the European Enlightenment from 1660 to 1800), users of informational objects and of organization systems were very narrowly circumscribed in comparison to any range of users we find today. They occupied only that smaller part of the total population who were educated and literate and were limited for the most part to those who could afford to buy and collect

such objects or who were privy to collections owned by others. Further, given the high costs of buying informational objects and creating storage for them, collections themselves were for the most part private rather than open to the general public in any modern sense.

A second way to characterize users of this period is that, given their relatively narrow range, they consisted primarily of scholars and members of the learned population of the time (including learned gentlemen and women plus some of a growing number of clergy, lawyers, and other professionals) communicating with other scholars and learned persons. One is simply hard-pressed to find people who were not schooled—for example, peddlers, servants, deckhands, and even many merchants—as part of the readership of the new literature.[9] This is not to say, of course, that public discussions, public performances, sermonizing in churches, and other public communication of the contents of informational objects did not take place. There is ample evidence that a growing number of such communication venues emerged during this time and that a great many people made use of them (i.e., apart from reading documents, etc.) to learn about political and scientific developments.[10] But the written record is more or less silent about anything more specific.

Third, the book's use centered on reading and discussing books (this includes reading bibliographies and library catalogs as well and not simply doing "look-up" reference searching in them), most often, one might suppose, for pleasure but certainly also to extend one's knowledge by using such objects as windows to the then rapidly expanding universe of knowledge. Occasionally, especially within the growing scientific community, use is described as reading accounts of others' discoveries related to one or another phenomenon or in terms of establishing primacy of discovery. But with respect to any more detailed descriptions of use the record is, again, more or less silent.[11]

In many respects this view of information users as a relatively small and circumscribed group is quite understandable and, from a modern perspective of broad and reasonably unfettered access, even forgivable. In the present day we have access to "the book" in great numbers, now expanded to all kinds of media that serve as alternatives to print-based informational objects, including an enormous and fast-growing digital realm; in fact, we are inundated with such things.[12] And we are inundated as well with information organization systems that provide access to such objects, both personal systems concocted by our own means and social systems engineered by others.[13]

In contrast, the first period was more like an informational object desert for a large part of the population. The book was increasing greatly

in numbers, of course, but any numbers we come up with when doing bibliographical and literary surveys and censuses are like drops in the proverbial bucket compared to our time. And can one even imagine living in a time when only laboriously compiled, individually published, and expensive bibliographies and hard-to-find and technically deficient library catalogs were all that existed to enable a person to determine what was "out there" in the form of such objects and to find one's way among them?[14]

This context of scarcity and relatively difficult access reminds us that it took nearly the entire period of more than three hundred years simply for the numbers of recorded informational objects to reach a more or less noticeable, let alone commanding, presence in the social fabric. Moreover, even given such numerical increases, the growth in the importance of the book in society, broadly speaking, was not merely a function of numbers. It also took this entire initial period for the book to lose the connotation of being dangerous in society, dangerous at least in the hands of the wrong people, especially given the role of the book as the embodiment of a new authority for knowledge, the authority of human scientific discovery rather than the authority of religious faith and its agencies or the authority of the state.[15]

Ultimately, the numbers of such objects and a general acceptance of the book as an appropriate social mechanism of communication appear to have come together only by the beginning of the nineteenth century. Only then could "the book" even begin to assume the status it has now attained.

Information Users and Use from the Early Nineteenth Century to the End of World War I

Developments in the period from the beginning of the nineteenth century to 1920 are closely related to a series of societal changes, the most important of which for our consideration were those in printing and publishing, in the creation of the modern "open" library of the nineteenth century, in education, and in the rise of modern organized scholarly and scientific research.

Printing and Publishing

Throughout this period changes in printing technology made the book more accessible in numbers and at lower costs. Even more important,

however, was the expansion of publishing markets, including readers associated with organized scholarly and scientific research, as well as the common reader.[16]

Forms of publications also changed during this period. Alternatives to the physically substantive monograph (the archetypical image of knowledge, the treatise), a codex volume consisting of a fair number of leaves of pages encased between two covers, included multiwork items (serial and anthology-like) and other less physically substantive publications (tracts, pamphlets, brochures, advertisements, and the first research reports).[17] In the twentieth century the latter came to include in-house publications of hundreds of organizations, often created with new replicating technologies.

The Modern Library of the Nineteenth Century

A solution to the cost of creating and maintaining library collections, a reality only for the relatively wealthy during the previous period, appeared by the mid-nineteenth century—an economy of scale in which local communities gained the right to raise and use tax monies for the creation of libraries for all citizens in the community to use without additional charge.[18] The result was library collections that amounted to public rather than private institutions, an idea that caught on very quickly, so that by the 1890s public agencies of this kind numbered well over 10,000 in the United States. This development came to be called, after the 1940s, the "modern library movement."[19] One report at the turn of the century described library progress in terms of "open" (i.e., "public") as opposed to "closed" (i.e., private) collections.[20] It should be noted as well that other kinds of libraries (e.g., academic, historical libraries, schools, etc.) joined in the movement wholeheartedly so that the tone emphasized the necessity of all citizens having access to "the book."

Education

A third important social factor in the history of informational objects and systems in society consisted of significant changes in education, including the development of a social imperative for public education and the development of higher education beyond the typical pre–Civil War college. Undergraduate programs replaced the older college, and graduate programs became the initial home of new approaches to scholarly and scientific research.[21]

Scholarly and Scientific Research

Scholarly endeavors had been gradually increasing throughout the European Enlightenment period, but before the mid-nineteenth century a significant proportion of such endeavors remained expressions of the work of independent scholars.[22] As the century advanced, however, scholarly and scientific work increasingly shifted to university settings and often began to take the form of organized group efforts within disciplinary specializations. The shift toward specialist orientations resulted, in turn, in a corresponding shift in social values, in which specializing became an acceptable way to express one's scholarship.[23] It also came to embody and energize the modern belief that the progress of civilization and the ability to solve significant social problems were dependent upon the development of such specializations.[24] Finally, the rise of specializations was also important because as specialists increased in number they not only created professional organizations and publishing venues that provided a means for them to communicate their ideas but also became consummate producers and users of the new specialist knowledge being generated.

Changes of the foregoing kinds as well as corresponding enormous increases in the numbers of scholarly and scientific publications (particularly of periodicals) associated with them eventually became so notable that by the beginning of the twentieth century a clearly identifiable scholarly and specialist academic community had become firmly established. And only four decades later (by the close of World War II), after having been augmented still further by the development of organized team research and specialized research facilities (including those associated with the rise of commercial and industrial research), organized scholarly, scientific, and technological research had become ubiquitous in society.[25]

Information Organization

Approaches to information organization increased in number during this period from two (bibliography and early modern library cataloging) to nearly the full range of what we have today, the sole exception being computerized information storage and retrieval. And all such approaches went through significant changes as the period progressed. Bibliography, for example, became centrally focused on the rise of organized scholarly and scientific research and the latter's emphasis on subject specialties, whereas library cataloging, having by this time overcome its earlier technical deficiencies and having begun to offer multiple pathways to access in single systems, came to be centered principally in the tenets

of the modern library, though one must be cautious in drawing nonoverlapping lines between them.

Both bibliography and cataloging, however, experienced failure in their efforts to address the increasing numbers of alternatives to the physically substantive monograph, especially multiwork items of all kinds, as their methods and approaches to the idea of listing items were not flexible enough to list easily and economically whole works gathered within collective publications. However, both of these traditions of information organization played equally important roles by the 1880s and 1890s in launching indexing, a new approach to information organization. Indexing was designed especially to deal with multiwork publications by creating separately published indexing journals (e.g., H. W. Wilson indexes, *Index Medicus*, *Chemical Abstracts*) that listed the individual articles of serial publications and items found in anthologies and by gathering the growing numbers of citations in cumulative volumes. In short, indexing journals were solely devoted to listing the growing numbers of works published in collective publications. Indexing also became the base of a number of large and significant projects in science (e.g., the Concilium Bibliographicum project for the zoological sciences and the *International Catalogue of Scientific Literature*).

In the 1890s a fourth major approach to information organization called documentation also got under way. It consisted of an amalgamation of techniques and goals in bibliography, library cataloging and classification, and indexing but was focused especially on the needs of specialist scholars and scientists and was created to help such specialists contribute solutions to social problems.[26] Its inclusion of a broader range of publication types than any of its three constituent approaches, combined with service ideals that included delivery of bibliographical citations, made this approach important to the special library movement that arose at the beginning of the twentieth century. Perhaps most important, from its very start the documentation movement played a significant role in changing how subject access to informational objects was achieved. It did so by viewing informational objects as conglomerations of subjects and subject information that could be parsed and accessed separately. This contrasted to earlier approaches in which subjects were viewed as singular characterizations of whole documents, regardless of whether the whole documents were entire books or entire shorter works such as periodical articles found within larger volumes.

Finally, archival, records administration, and museum approaches to organization also had their modern beginnings in this period. However, their respective comings-of-age occurred only recently.

Information Users and Use

Explicit characterizations of information users began to develop in this period as a way to distinguish between the aims of bibliography, on the one hand, and those of libraries and library cataloging, on the other. At the beginning of this period, both these realms were focused on serving what amounted to the learned and educated segment of society. As time passed, however, two variant views of the learned user arose. For the literate user in general (i.e., learned gentlemen and women), use meant simply furthering one's own mental cultivation through reading, reading itself being a tool for becoming a learned person. For a smaller part of the literate population (scholars investigating some area of knowledge), use also required the more explicit identification of and finding access to relevant publications in one's areas of interest, even when such publications were obscure and not easily obtainable.[27]

After the mid-nineteenth century, the foregoing characterizations of scholarly and learned users became even more pronounced. Scholarly users increasingly became identified with the second of these two senses of information users and use, particularly in the form of organized scholarly and scientific research, whereas learned gentlemen and women users receded somewhat into the background as a more general characterization. Researchers in turn became increasingly identified with specialized fields, with becoming experts in research methods within such fields, and with even stronger needs to keep abreast of developments in their specialties.

In addition, the modern library movement brought a different complexion to the picture of information users and use. Although the movement was led in most respects by generally learned persons, its goal was to promote or enable mental cultivation among readers, the latter ranging from those already well along the cultivated path to those who had barely begun. Mental cultivation was not an effort to create elitist thinking or people with refined manners, as some have claimed, though doubtless it had that effect in some cases. Rather, it was more closely related to bringing the idea of the general literate gentleman and woman (the first kind of user in this section) to the population as a whole. In turn, it found a rationale for this goal in the "faculty psychology" that found expression in Scottish common sense philosophy and that had come to dominate American cultural institutions in the first half of the nineteenth century.

Faculty psychology conceived of the mind as having two general groupings of powers, the intellectual powers or faculties, which led

ultimately to the exercise of one's reason, and the active powers or faculties, which led in turn to willful action. The lofty goal of mental cultivation was to enable a person to achieve balanced control of all of the powers in such a way as to lead to the acquisition of knowledge based on first principles and high moral action.[28]

It was believed that mental cultivation could be achieved by the exercise of the mental faculties or powers (somewhat in the manner of mental "workouts"), and while there was more than one way to do so, one of the most effective was to read the very best good books (i.e., treatises) written by the very best authors. The latter is what operationalized this kind of thinking in the modern library movement, for besides being open and available to the public, the library conceived of its role as supplying very well selected collections of such books from which a librarian could suggest reading to users on the basis of the librarian's estimate of where the user was in the mental cultivation process. This occurred in a day when users ordinarily were not allowed to go to the shelves but rather consulted with the librarian for appropriate book choices.

Charles Cutter, by the 1870s a key participant in the library movement, took the idea of mental cultivation further by basing his syndetic (i.e., complexly interrelated) dictionary catalog on elements of it. He spoke of users in two different ways, one related to how their minds worked, the other related to how they asked for reading material. In the first he divided users by means of a scale based on the facility they had for thinking in a classified manner, an understandable thing to do because he had concluded along with others that thinking about subjects in a classified way was one of the hallmarks of mental cultivation in terms of faculty psychology. At one end of his scale were those who approached any knowledge acquisition task and any searching for books that held the subjects of the universe of knowledge as an exercise of thinking within a classificatory context. In the middle of the scale were those who also viewed subjects of learning and the search for subjects in a classificatory way but tended to limit this approach to specialized areas in which they were interested. Finally, at the other end of the scale were those readers who had little awareness of how subjects (and thus the books that treated them) related to one another at all. He called the latter desultory readers, not in the sense of being mentally lazy but rather in the sense of lacking the mental classificatory guidelines ordinarily acquired during the mental cultivation process. They were, in short, mentally untrained, not mentally deficient.

He concluded that although the most enlightened way to organize a catalog was in a full classificatory manner, the largest class of users,

the desultory, would not be able easily to use such a catalog. Thus, he virtually turned the classified catalog structure upside down, placing the narrowest (i.e., most concrete) subjects in the direct search position. However, he then recouped the lost classificatory structure that connected such subjects together in a classificatory whole by incorporating into the catalog an elaborate and interconnected (i.e., "syndetic") cross-reference structure.

The second way Cutter spoke of users was in terms of how they pursued their searching, that is, for particular whole items for which they had some identification, or for categories of potentially useful whole items for which they had some idea of a relevant category. The importance here is not the difference between these two search goals but rather in his emphasis on searching for whole items rather than, for example, parts or elements of items. Doing the latter seems not to have occurred to him, and that may have been the case because of what appears to be his predisposition for seeing the natural unit of searching to be the physically substantive monograph useful to mental exercise and cultivation.

This picture of users and mental cultivation by one of the key figures in the modern library movement had the overall effect of conceptualizing use as a reflexive process. Books (i.e., whole items, especially physically substantive treatises written by the best authors) were valuable not for what a user could do with them as practical intellectual tools but rather in terms of what such informational objects did *to* those who read them by way of mental cultivation. Certainly this view fit into the reforming missionary-type aims of the movement when it first began. This can be conveniently rephrased as the effort to bring mental cultivation in the sense described here to the masses.

This view ran into trouble from the start. Librarians found that among growing numbers of library users (i.e., information users for our purposes), many were not so much interested in reading the best treatises by the best authors as in reading newspapers and fiction, both of which had been assuming greater roles because of increased marketing by publishers.[29] Increasing numbers of immigrants also did not fit into this view very well, given their need for materials focused on their original languages, on English language acquisition, and on practical assimilation matters. Moreover, the new library field had been swept by an open shelving movement by the beginning of the twentieth century that removed librarians from the principal position of suggesting reading materials. And libraries themselves were in some respect victims of their own success. The American Library Association, for example, became

increasingly differentiated into kinds of libraries, with views of use following the same such divisions—users and use becoming conceptualized at this point in terms of types of libraries. In this way it was possible to identify serious intellectual information acquisition with school, academic, and special libraries and "entertainment" reading with town libraries, larger city libraries often having a mixture of both approaches.[30]

Ultimately, however, what appears to have had the most effect in bringing an end to the mental cultivation model of users and use was an increasing emphasis over time on informational objects as tools for accomplishing practical tasks or to gain practical knowledge. In this shift of value informational objects became valuable not because of what they reflexively do to the user who reads them but rather because of what the user can do with the objects when used as tools. In the early twentieth century this approach to users and use, increasingly central to the rise of twentieth-century science (and scientism) as *the* tool of progress in modern society as well as the basic component of change in public education through the work of John Dewey and others who adopted pragmatism and an action orientation for teaching and learning, became central to all approaches to information users and use. This shift to an instrumental view of information organization and use did not happen overnight, of course, but rather occurred over several decades, its march to center stage being the core of the last period to be considered here—from the 1920s to the present.

Information Users and Use from the 1920s to the Present

In the 1920s the idea of information users and use began to be seen as the object of serious study in the information field, paralleling the rise of all kinds of serious study in the field.[31] By this time informational objects and their use occupied a position of central importance in society and in the ensuing decades have only become more deeply embedded into the social fabric.

Information Organization

A review of how information organization has fared in this final period will provide some context for information users and use in an age when information organization, an activity accomplished essentially in response to information users and use, has come to match the enormous production of informational objects that has occurred.

- Bibliography moved forward until the 1950s as the expression of serious information organization, its supremacy broken only after the introduction of computerized information storage and retrieval. The latter has, in effect, taken over the task of enumerative bibliography though not of analytical bibliography.[32]
- Documentation, which through the 1940s was referred to also as a kind of refined and important version of bibliography, had also been replaced by the 1960s by computerized information storage and retrieval, at least in public discourse in our field.
- Indexing ultimately achieved its own independent existence and recognition by the 1960s and 1970s—that is, separate from library cataloging, bibliography, and documentation—chiefly because indexers adopted computer techniques to form indexing systems and services. In some respects it could be viewed as the information organization tool of choice in the present period mainly because computerized information storage and retrieval has commonly used it as its own primary approach to information organization.
- Archives and records management fully came into their own during this period, archives beginning in the 1930s with the enactment of laws for government archival repositories and with the more recent move toward highly organized education within the context of the broader information studies field, and records management since World War II with the need in government, industry, commerce, and other private agencies for records control in a time when controlled and accessible records are at the core of organizational existence. More recently, it has focused especially on the capture of digitally created information objects (calling the process "digital archiving") and in doing so has encountered a whole new realm of use and users of information associated with the creation and use of digital rather than paper and print objects.
- Library cataloging and museum organization have been deeply affected by the adoption of computer technology for their processes, the former beginning in the 1960s, the latter only more recently. They persist in their separate identities, however, though in the case of library cataloging not without the mystifying rancor of some against certain aspects of "information science."
- Computerized information storage and retrieval has assumed the role of the primary and most recognized approach to information organization. The name of this approach is actually vague, being little more than my name for a cluster of manifestations of the application of computer and electronic network technology to

information organization. This approach to information organization had its start in the 1950s with the arrival of general purpose computers in the public realm and after a relatively brief period in which microphotographical and mechanical solutions had been applied to what was then called the "bibliographical crisis" or the "library problem"—the nearly uncontrolled growth of information resources essential to research of all kinds. The growth of this approach was enhanced by the rise of the computer science field in the 1960s and by the continuous development of more powerful computer systems and network technologies. And now, of course, computer and network technologies (now often called information technologies) provide the basis for the rise of the Internet and the Web, serving as enabling tools for the latter. The chief operational mode of computerized storage and retrieval is the use of indexing as its main approach to information organization, moderated by its most powerful method: viewing informational objects not as the discrete entities that came to society from the print-publishing realm replete with identifiable creators, genres, beginnings, middles, and ends, and consisting of normal written discourse that consists of chapters, sections, paragraphs, and sentences but rather as streams of bits and bytes that can be accessed at any point along the stream, though such access usually focuses on single words in text or on pixel variations in graphics and not simply on individual bytes.

Information Users and Use in the Recent Period

Within the context of extraordinary growth in numbers and kinds of informational objects and the march of such objects to a ubiquitous central presence in modern society as well as the changes to traditions of information organization as they have responded to the growth and centrality of informational objects in society, four useful observations can be made regarding how information users and use have fared.

Documentation and Information Users and Use

Documentation formed the earliest nexus of concerns and studies of information users and use in this period but not in the original form of that approach to information organization. When documentation first arose in the 1890s it was focused on serving scholars working generally in the social sciences, particularly with an eye to broaching social problems.

During the 1920s documentation was reorganized, however, with a focus more directly on specialists in science and technology, adopting the name "documentation" finally by the beginning of the 1930s. It subsequently made three important contributions to ideas about users and use within this sci-tech framework.

First, over the next three decades, principally in the sci-tech realm, it applied its original emphasis on parsing informational objects in terms of their subject content (such objects have not simply one or two chief subjects but what amounts to bushel baskets of subjects, any one of which may be of value to information users). Sci-tech information users were viewed not as those who search for informational objects as expressions of small numbers of distinct main subjects but rather as those who wished to look inside informational objects for evidence of any of a number of subjects of lesser extent or discussion embedded there. This approach to information organization became the standard way of referring to sci-tech information use and had subsequently been adopted as basic doctrine for information storage and retrieval by the 1960s.

Second, documentalists developed the first strong conceptualizations of users (in this case, especially sci-tech users) as being connected to literature domains.[33] They made this connection not in a casual manner but rather in a mathematical (statistical) sense (called, at first, statistical bibliography), its most notable early expressions coming from Samuel Bradford. A statistical approach to bibliography was subsequently transformed into what in the post–World War II period came to be called "bibliometrics." And during the past two decades the idea of users being members of such realms has become basic to the work especially of Scandinavian scholars under the general aegis of domain studies. In short, if one begins with the assumption that information users and use are expressions of domains, one has a fair chance of describing information users and uses with greater facility than if one treats users and uses as simply individual variables.

Third, documentation, along with research libraries (the Association of Research Libraries was established in the early 1930s), strongly emphasized a view of sci-tech and scholarly use of information that is conveniently encapsulated by the phrase "shoulder standing." In other words, the advance of science and technology is enabled when scientific and technical workers, having at their fingertips both complete lists of past informational objects that impinge on their work as well as access to them, can figuratively stand on the shoulders of their predecessors and reach new heights in knowledge discovery and advance. This idea

had been around for a long time, so it is not appropriate to say that documentation invented it. Documentation did, however, emphasize this idea heavily, and it became basic to efforts to solve the library/bibliographical problem of document glut after World War II.[34]

By way of summary, for documentation, sci-tech users became the central focus of information organization efforts. Users so conceived especially function in literature domains, and they tend to be "shoulder standers" in their need for a complete record of past knowledge discoveries. Some cracks in this general approach to information users and use began to appear by the 1960s and 1970s. As more and more studies of information users and use came into existence, it became apparent that sci-tech use of information is only part of a much larger information user and use scene. In fact, information user and use studies since the 1970s, particularly those associated very recently with the Internet, have emphasized nonscientific and nontechnical users and use of information. Many who engaged in the scientific study of information that became dominant during the 1960s and 1970s under the label "information retrieval" were quick to state, of course, that their work was not limited to the study of scientific information, that is, information only for scientists and technical workers. Even so, their work focused principally on very purposeful and intelligent information users and uses whose approach to information falls squarely in the instrumental use of information described earlier. Another aspect of this earlier approach to the study of users and use of information was the occurrence of studies beginning in the 1960s that found that not even sci-tech use of information always or even often adopts a full "shoulder-standing" view of the need for information. In this respect, the idea of a shoulder-standing view of information use has functioned as a more or less unexamined ideal of the scholar scientists and not of the more mundane realm of everyday science.[35]

Libraries and a Demographic Approach to Information Users and Use

A second approach to information users and use that arose during this most recent period and that ran parallel to the documentation movement came from the library realm. It began at the Graduate Library School of the University of Chicago during the 1930s and among other things focused on the application of demographics as a way to conceptualize users.[36] This emphasis led in turn after World War II to efforts especially to look at public library use in terms of population analyses (e.g., the 1949 Public Library Inquiry) and to a continuous round of

efforts beginning in the 1950s to set up cooperative library networks for reaching population segments not hitherto served by libraries. In some respects the effects of social changes in the 1960s on the library field can also be seen as an extension of this social demographic approach, at least to the extent that such changes yielded strong waves of advocacy to serve previously unserved or nontraditional populations. The same social changes also became the basis for criticisms raised at the beginnings of the 1970s about the nature of language used in library subject cataloging. Such criticisms later yielded extensive actions to change subject heading language not simply to avoid offending or demeaning segments of the library's user populations but also to emphasize "user-friendly" systems.

The Discovery of the Term "Information"

A third important aspect of the study of information users and use during this final period has been the adoption beginning in the 1950s of the term "information" in formulations about information users and use.[37] Part of the movement to adopt the term obviously came from notions given form by Claude Shannon and Warren Weaver and by Norbert Wiener in the late 1940s about the nature of communication and information. But the adoption of the word had more driving it than simply communication theory. For example, the term fit especially well with the idea of practical rather than mentally reflexive knowledge that had been growing since the turn of the century. And the term provided an especially potent way of describing not simply the multitude of subjects assumed to exist in information objects but also the instrumental connotations of such subjects, particularly by sci-tech users of documents.

The use of the word "information" in describing users and use was picked up almost immediately by the new and growing realm of computerized storage and retrieval, especially in its capacity to parse the words of documents, so that by the end of the 1960s the idea of providing access to whole documents or information object access was being contrasted to providing access to information within such whole entities by means of words. In the end, the idea of whole documents as the focus of retrieval (common to library cataloging and at least some earlier forms of indexing) became the loser in the comparison. The equation of information access with word access also became the basis of a spate of catalog use studies in the 1950s that invariably found "access to information" in library cataloging and classification to be wanting if not an outright failure.

Throughout this period of shift in ideas few seemed to recall that the original idea of more granular access to informational objects, having originated in documentation by viewing documents as having many diverse subjects rather than one or two "main" subjects, was directed at only one segment of the user population—scholarly, and later sci-tech users—and not to everyone. By the 1970s, however, the idea that everyone needed the same kind of granular access in virtually all situations had become entrenched across the information studies field and since then not only has been taken as unassailable doctrine but has been adopted as the gold standard for all information users and all information use regardless of its context—whether in libraries, on the Internet, in archives and records, in museums, and so on.

Use Studies in Contrast to User Studies

A fourth and final approach to information users and use during this third period began in the 1970s and continues to the present. The central point in these more recent approaches has been not to identify users as groups of people but rather to focus on the use of informational objects in order to identify factors that cause use to vary and to try to operationalize findings about such factors with respect to information organization.

One direction taken in such studies can be traced to the work of Brenda Dervin in the field of communication studies. Dervin began her career in the context of communication studies in urban settings but, beginning at Syracuse University in the early 1970s, applied her findings to information use in libraries. At first, she and her students (e.g., Zwiezig and Nilam) made heavy criticisms of previous approaches to information users as *mere demographics* that did not get at the needs of the everyday information user.[38] But the more important extension of her work, which she called a "sense-making" approach to information use, consisted of developing a model of human mental communicatory behavior that occurs when people interact with informational objects of any kind (e.g., not only documents but also other people). Her focus, in short, was on identifying the characteristics of individual information interaction, with the ultimate goal of converting her findings into operational measures for information organization and delivery systems.

A second direction taken by information studies in this period has been influenced by the growth of cognitive studies since the 1980s. The trail of this approach includes the discovery by Robert Taylor that potential information users are not always or even often sure of what information they are searching for or even in need of. Belkin and Oddy's

Anomalous States of Knowledge (ASK) studies, and more recently a virtual spate of studies that focus on one or another factor in information needs, information behavior, information searching, and so on, fall into this approach. And in some respects the work of Chatman ("small worlds") and Kuhlthau (steps and "affects" in information access) occupies the region between these two closely parallel approaches to information users and use that focus on cognitive issues.

Conclusion

Looking over the characterizations of information users and use—such phrases as learned gentlemen and women, the first scientists, the generally literate, a population that needs mental cultivation (in the context of faculty psychology), members of a growing cadre of organized scholarly and scientific research, users in terms of kinds of libraries, scientific-technical users who are viewed as shoulder standers, use as a mental process involving information interaction in contrast to demographic user categories, and so on—leads us to conclude that while we might have achieved momentary clarity at times, a clear and definitive picture of information users and use has yet to emerge. It is in this respect that I conclude that the idea of information users and use remains rather mysterious—rather like the images we see while driving in a fog. They begin to become clear but then become swallowed up in the mist. Certainly, no gold standard has been developed by which to measure progress in the matter. Perhaps it is also a prime example of the old story about a group of blind persons standing around an elephant and attempting to describe it by touching different parts of its body without being able to integrate all of their findings. Further, many of the characterizations seem ultimately based on idealizations of information users and uses, components of intellectual theories that either are related to the value of informational objects to these people or, as we can see in more recent studies, are attempts to employ more rigorous research methods in the matter but are hindered by the problem of constructing useful samples to study.

With the rise of the Internet and the Web, two things seem to promise more, not less, confusion in the matter. First, I am not convinced that more recent studies of users in the context of the Internet and the Web are pursuing the matter with useful premises. The characterization of information users and use in the past has almost always been conducted from the standpoint of a print-based society in which the interaction of people with information organization systems had the goal of obtaining

"things" called informational objects, valued because they were thought to contain important, perhaps authoritative, representations of human knowledge. However, the digital realm of the Internet and the Web has already taken an unexpected turn toward being not simply a source of informational objects but, even more important, a medium for human communication and interaction. Thus, we can characterize the use of the Internet and the Web not only as the search for objects with humanly authoritative knowledge but also as a medium for persons who want to talk to or listen to others. The new digital realm has also become a medium for persons who want to shape a virtual world, providing a control and comfort elusive in the real world. In this respect it seems appropriate to ask, What is the relationship of these newer motivations to the older idea of information users and use, which were attempts to find and use things (informational objects) that often had the connotation of containing authoritative knowledge? If the two sets of motivations are essentially different, is it then appropriate or useful to apply information organization and access practices from the older context to the newer?

Second, I wonder if our model of information use as sequential occasions (one by one by one) of searching for and using informational objects (or even as the sequential occasions of talking to others or of shaping one's own world) is even close to the real actions of a species (humankind) for which information processing is not simply an isolated act that one chooses to do at a specific moment but rather a continuous unbroken process that goes on every minute and every second, whether one chooses consciously to do so or not. Information use in this respect is not like the actions of the robot in the movie *Short Circuit* who kept saying, "Input, give me input" and then proceeded to turn on or consult some specialized information organization device or medium such as an encyclopedia or a television set. The result of using this model is to try to isolate and analyze each moment in which input takes place (usually in terms of informational objects). In reality, there is no such division of our inputs into separate points. Input is continuous, each moment not only impinging on others but also interlaced in large numbers of ways. In short, one of the basic desiderata of our species (possibly of all biological species) is that information use be seamless and extraordinarily complex. Thus, isolating the use of individual informational objects and talking as if that use is somehow special or the only kind of information use worth discussing seems misleading—particularly when much, if not the greater part, of human information processing appears to be for the purpose of passing the time or simply sensing the presence of others.

We may need to consider some other starting point when we discuss information users and use and say, "Such and such a kind of person has an information need of this or that character." How, in fact, would the way we refer to information users and use be altered if we were to begin with a more complex picture of the human as an information-processing species? Considering a different starting point would at least be no less fruitful than the work that has been done so far and that has caused the information user and his or her use to remain for all practical purposes as mysterious as they have always been.

Notes

This essay is based on my Yule Distinguished Lecture before the School of Information at the University of Texas at Austin on April 29, 2008.

1. I admit to some hesitation in describing in this way what my study has encompassed. My work has not simply consisted of word studies in which one goes to a dictionary to determine "meanings" but rather has involved something of the analysis of the discourse of those working on information access systems. However, it would be erroneous to call it by the formal name "discourse analysis" because discourse analysis has other connotations that I have never claimed—for example, that one might impose on words an ideology of social forces that reveal the social motivations and relationships of their speakers, or that one focuses not especially on what is said but on the significance of the act of saying it. What I did was more akin to C. S. Peirce's attempt to identify what particular words signify for those using them, and it is put forth in the more or less Wittgensteinian context that words have meanings chiefly in how they are situated or used within a given language context, though again without the connotations of being able to divine so-called deep philosophical and social themes that one then attributes to the speakers.

2. In reality, I wince intellectually every time I use the term "information organization" to refer to pre-1940s work because while the phrase has meaning in the present time, it is not how people before the 1940s would likely have described their work in, say, library cataloging, bibliography, indexing, and so on.

3. I began collecting observations on this while studying subject cataloging during the early 1980s and even wrote one early article on the matter, "User Categories and User Convenience in Subject Cataloging," *Reference Librarian* 3, no. 9 (Fall–Winter 1983): 113–32, reprinted in *Library Lit. 15—The Best of 1984*, ed. W. Katz, 76–92 (Metuchen, N.J.: Scarecrow Press, 1985).

4. Saracevic seems to have first broached the idea of information science development in this way in his "Information Science: Origin, Evolution and Relations," in *Conceptions of Library and Information Science: Historical, Empirical and Theoretical Perspectives*, ed. P. Vakkari and Blaise Cronin, 5–27 (London: Taylor Graham, 1992). He continued his discussion in, for example, his acceptance address for the ACM SIGIR Gerard Salton Award for Excellence in Research, entitled "Users Lost: Reflections on the Past, Future, and Limits of Information

Science," *SIGIR Forum (ACM)* 31, no. 2 (1997): 16–27, and in "Information Science," *JASIS* 50, no. 12 (1999): 1051–63.

5. D. Raber, *The Problem of Information: An Introduction to Information Science* (Lanham, Md.: Scarecrow Press, 2003).

6. M. Bates, "A Tour of Information Science through the Pages of *JASIS*," *JASIS* 50, no. 11 (1999): 975–93; T. D. Wilson, "On User Studies and Information Needs," *Journal of Documentation* 37, no. 1 (1981): 3–15, reprinted in *Journal of Documentation* 62, no. 6 (2006): 658–70 as part of a theme issue entitled "60 Years of the Best in Information Research"; T. D. Wilson, "Models in Information Behaviour Research," *Journal of Documentation* 55, no. 3 (1999): 249–70.

7. Norman Roberts, "A Search for Information Man," *Social Science Information Studies* 2 (1982): 93–104.

8. Defining periods of this kind are not efforts to show cause-and-effect relationships. A period does not cause a phenomenon within it. Periods are, rather, mere conveniences for dividing up the topic and obtaining useful views of its elements.

9. This description is not intended as some sort of indictment of social elites. Rather, it is intended as a simple statement of the reality of an age in which the idea of widespread education and literacy had not yet become a societal imperative.

10. Many of a growing number of more popular history books that trace the early development of ideas and fields of study regularly refer to public lectures as a common venue for spreading new information, especially about matters in natural history, and point out that such lectures often became enormously popular. See, for example, the background descriptions in Richard Hamblyn, *The Invention of Clouds: How an Amateur Meteorologist Forged the Language of the Skies* (New York: Farrar, Straus and Giroux, 2001) or the general discussions in Simon Winchester, *The Map that Changed the World: William Smith and the Birth of Modern Geology* (New York: HarperCollins, 2001).

11. The exception to this assertion is a growing literature of the history of the book, especially as discussed among cultural historians who have discovered over the past three or four decades a growing number of informative anecdotes of book use in this earlier period.

12. In surveys of the students in our first classes on general information organization from 2000 to 2003, when I asked students to list kinds of informational objects they found in their homes or apartments and to provide very rough counts of each kind, the numbers they produced were surprising, reaching 20,000 to 30,000 items in most cases, most in forms other than printed books. (I had them include any informative objects, including clothing and food labels, music, including MP3s, etc., household papers, school materials, movie discs and tapes and files on their computers. Even so, the totals did not even begin to include other electronic sources they used but had not "captured.")

13. It is the existence of the latter, especially, and the new technologies that support them that lie in great part at the basis of the book entitled *Ambient Findability* by Peter Morville (Sebastopol, Calif.: O'Reilly, 2005).

14. I for one cannot, and it is easy to insert the present in the past—a good example of which occurs in the movie *Becoming Jane*, a fictional account of the life of Jane Austen, who lived from 1775 to 1817. In one scene, perhaps in the

manor house associated with her own parents' less extensive home, Austen is reading a book against a backdrop of scores of bookshelves extending around and up a stairway when the man whom she comes to love goes to the shelves and immediately finds a book for her to read that was not in her usual repertoire of reading. The scene was intended to show how he challenged her reading and world outlook, but the questionable part of it was how it transported back into the past the well-organized and user-friendly (at least in comparison to those days) library idea of the twenty-first century. Given the times, long before the organized library idea of the modern day had been conceived, it seems to be a stretch to include that kind of ease of access in a scene purportedly having taken place nearly two hundred years ago.

15. We sometimes all too easily assume that when printing was invented in 1453 it was almost immediately adopted by everyone. But this was not the case. Adrian Johns, in his *The Nature of the Book: Print and Knowledge in the Making* (Chicago: University of Chicago Press, 1998), demonstrates how for much of this period both printing and reading underwent waves of attempts at control because of skepticism about whether every person or every untutored, tender, and easily swayed mind should have access to printed books. Even in our own country a law against improper publishing was enacted in 1798 in order to control and brand as seditious nasty and disagreeable reporting on the government. And some still mount campaigns to prohibit not simply access to certain kinds of informational objects but indeed their very existence. The book as a new source of intellectual authority in society is one of the themes in a paper by the Spanish social philosopher Jose Ortega y Gasset given before a bibliography conference in the early 1930s; he surmised that it took approximately four centuries for this shift to come to fruition, that is, by the mid-nineteenth century ("The Mission of the Librarian," in *Of, by, and for Librarians*, 2nd series, ed. J. D. Marshall, 190–213 [Hamden, Conn.: Shoe String Press, 1975]).

16. Technological advances involved the application of powered machinery of one kind or another to individual parts of the publication process, but some also revolved around changes in the composition of paper and adding lithography and eventually photolithography to the printing process. For a useful but reasonably compact account of such developments see, for example, S. H. Steinberg, *Five Hundred Years of Printing*, 3rd ed. (Harmondsworth, UK: Penguin Books, 1974). As to markets, the classic discussion of the common reader behind such markets remains Richard Altick's *The English Common Reader: A Social History of the Mass Reading Public, 1800–1900* (Chicago: University of Chicago Press, 1957), though since his work a great number of works on publishing history and the history of reading have enhanced our understanding of the changes that such markets involved.

17. This form of publication was pushed as well, especially in terms of the common reader market, where one of the new publishing ventures was to create a series of cheaply made monographs (both fiction and nonfiction) called "The Library of . . . [topic or emphasis]" that people could buy on subscription. In my study of the lectures given in 1887–88 at the first library school—the School of Library Economy at Columbia College—I found class presentations in which published sets of writings were described as things incipient librarians were expected to know about, especially in travel series and in other notable themed series.

18. A caveat related to this solution is that it took some time to interpret the idea of *all* citizens to include virtually everyone and not simply the dominant voting or socially respectable majority.

19. See especially the published doctoral dissertation of Jesse Shera, *Foundations of the Public Library: The Origins of the Public Library Movement in New England, 1629–1855* (Chicago: University of Chicago Press, 1949); and Sidney Ditzion's *Arsenal of a Democratic Culture: A Social History of the American Public Library Movement in New England and the Middle States from 1850 to 1900* (Chicago: American Library Association, 1947). These two works provided the starting point for a considerable research front in the 1970s to interpret and discover the fine points of the nature of that movement, producing a notable "revisionist" stream of thought that saw in the public library movement an attempt by social elites to dominate the public.

20. Charles A. Cutter, "Library Development," in *The Nineteenth Century: A Review of Progress during the Past One Hundred Years in the Chief Departments of Human Activity*, 155–70 (New York: G. P. Putnam's, 1901). It also appeared under the title "The Development of Public Libraries" in the *New York Evening Post*, January 12, 1901, sec. 3, 7–8, and in the *Report of the U.S. Commissioner of Education, 1899–1900*, 2:1352–59. It was reprinted more recently in *Charles Ammi Cutter: Library Systematizer*, ed. F. Miksa, 140–46, Heritage of Librarianship Series no. 3 (Littleton, Colo.: Libraries Unlimited, 1977).

21. Later, graduate education would come to share the research task with industrial- and government-funded research and would become, along with undergraduate education, the eventual home of professional education.

22. In my work *The DDC, the Universe of Knowledge, and the Post-Modern Library* (Albany, N.Y.: Forest Press, 1998) I discuss the fact that the classification of knowledge, a matter that runs parallel to the rise of organized scholarly research in the modern period and that is closely related to it, shifted its vocabulary during the nineteenth century from "classification of knowledge" to "classification of the sciences." In that context science referred to a broader nineteenth-century sense of the term rather than to its narrower twenty-first-century American sense in which it focuses on the natural sciences or on science as restricted to empirical and quantitative studies.

23. A. Oleson and J. Voss, eds., in *The Organization of Knowledge in Modern America, 1860–1920* (Baltimore, Md.: Johns Hopkins Press, 1979), provide a thought-provoking collection of studies of the process by which specialization took place and became socially acceptable in the United States and how the rise of the university figured into the process. See especially the introduction by the editors (vii–xxi) and the initial articles by John Higham ("The Matrix of Specialization," 3–18) and Edward Shils ("The Order of Learning in the United States: The Ascendancy of the University," 19–47) for an exemplary overview of the matter. Higham and Shils also provide a useful service in comparing what was going on in the United States to what was happening in Europe, extending the discussion substantially beyond America. Their sources also provide a basic reading list in the matter. Other authors in the volume treat specific specializations that representatively cover the entire universe of knowledge as well as aspects of the institutional context of learning, and the volume closes with some comparative views. Robert Flint, *Philosophy as Scientia Scientiarum* (Edinburgh: W. Blackwood, 1904), provides a striking and well-argued Scottish view of the

problem of specialization that merits attention even today because of how its assumptions provide basic insight into thought about the nature of knowledge at the beginning of the twentieth century.

24. The rise of documentation as a tradition of information organization during the 1890s, especially in the work and thought of Paul Otlet, expressed the connection between information availability and solutions to social needs very directly. D. Muddiman, "A New History of ASLIB, 1924–1950," *Journal of Documentation* 61, no. 3 (2005): 402–28, expresses the connection very adroitly in the context of the history of the British special library association (ASLIB). E. Christianson, "Special Libraries: Putting Knowledge to Work," *Library Trends* 25, no. 1 (1976): 399–416, while not directly addressing the idea of the production of solutions to social problems, implies as much in her brief history of special libraries in the United States.

25. D. A. Kronick in *A History of Scientific and Technical Periodicals: The Origins and Development of the Scientific and Technological Press, 1665–1790* (New York: Scarecrow Press, 1962) determined that five hundred or so scientific and technical periodicals came into existence between 1665 and 1790. The nineteenth century saw such numbers swell to nearly 10,000 and by the mid-twentieth century to numbers estimated from about 35,000 to more than 50,000. Census figures derived for different periods vary widely, depending on what one counts and how one counts it. For example, H. C. Bolton in *A Catalogue of Scientific and Technical Periodicals, 1665–1895, Together with Chronological Tables and a Library Check-List,* 2nd ed., Smithsonian Miscellaneous Collections 1076 (Washington, D.C.: Smithsonian Institution, 1897) lists nearly 8,500 pure and applied science periodicals for the period 1665 through 1895. That number, while impressive, omits medical publications. Even so, it represented an increase of more than 3,475 titles (about 70 percent) over his first-edition list published a decade earlier. J. R. Porter, "The Scientific Journal—300th Anniversary," *Bacteriological Reviews* 28, no. 3 (1964): 211–30, notes that estimates at the mid-twentieth century range from 25,000 to 100,000. Following a study made in 1963, he concluded the actual total was nearer 35,000. Even so, he notes that 17,000 to 19,000 other publications (technical reports of government and commerce plus house organs) are not included in the count. Other, often off-the-cuff estimates from the 1950s and 1960s regularly speak of some 50,000 scientific serials. Of course, that number has increased even more spectacularly in the succeeding half-century. And these numbers are for only identifiable periodicals. It does not even begin to broach the rise of separate technical reports and other independent publications.

26. It is significant in the latter respect that Paul Otlet, one of the two Belgian scholars who founded the original documentation agency—the Institut internationale de bibliographie—afterward became instrumental in the creation of the League of Nations.

27. Donald deB. Beaver, "The Smithsonian Origin of the Royal Society Catalogue of Scientific Papers," *Science Studies* 2, no. 4 (1972): 385–93, describes in some detail how a young lieutenant in the United States Army Corps of Engineers, Edward B. Hunt, actually came up with the idea that became the source of the suggestion by Joseph Henry, the secretary of the Smithsonian Institution in 1855, that the Royal Society issue what subsequently became its *Catalogue of Scientific Papers* (19 vols., 1867–1925). Beaver's account of Hunt's

search for journal articles and so on in the absence of any indexing or other information organization tools is instructive, for it provides the basic rationale not only for serious bibliographical and library cataloging endeavors in general but also for the necessity of providing access to multiwork publications, even if limited to one or another field. By the 1920s the efforts of Hunt had virtually become an industry of indexing efforts in nearly all fields of specialization. A similar picture emerges in accounts of the beginnings of *Index Medicus* in the work of John Shaw Billings.

28. The idea of faculty psychology, especially its origins in Scottish common sense realism, became a topic of much general investigation during the 1970s and 1980s. My first attempt to show its application to libraries and to the idea of subject access appears in my work entitled *The Subject in the Dictionary Catalog from Cutter to the Present* (Chicago: American Library Association, 1983), esp. 37–44. Having originated among Scottish philosophers during the eighteenth century, especially in the writings of Thomas Reid, and then popularized by his followers, notably Dugald Stewart, it became in some respects a common man's philosophy. Some overtones, perhaps not acquired through formal study, seem to appear, for example, in the writings of novelist Jane Austen, in the balancing act she portrays in her various works between the powers of reason and the active powers of the emotions, the latter always to be held in check in order to ensure high moral action.

29. The most common way to describe this form of information access has been to call it reading for entertainment, though this is a misleading characterization insofar as many people do much more than entertain themselves when engaging in this form of information access. They acquire, rightly or wrongly, views of the world that they would not otherwise receive, attitudes that help to shape their socialization, and so on. We might today call this "lite" reading, though it is now very much augmented by such alternative media as sound recordings and motion pictures.

30. The division of users by kinds of libraries occupies a large part of my publication entitled "User Categories and User Convenience in Subject Cataloging," a reflection on themes found in my *Subject in the Dictionary Catalog from Cutter to the Present.* But, as I show in that article, this approach to dividing users into groups and speaking of their information use is very troubling and in many respects makes little sense. Perhaps Cutter had real insight when he approached users and use on the basis of the mental training that readers brought to the library. If little mental training is involved and those organizing informational objects take little effort to show either differences in quality among such objects or relationships among them, then information users will face the possibility of experiencing distinct difficulties in the search and selection process.

31. We need to remind ourselves that from the standpoint of research our field is only about eighty years old, and even then we are pushing the notion of research, because study began slowly and only really took off after World War II.

32. Enumerative bibliography is basically the listing of informational objects. Analytical bibliography (sometimes called critical bibliography), which had its start at the end of the nineteenth century and which has persisted throughout the twentieth and twenty-first centuries, more often in association with textual studies, consists of the examination of the conditions under which texts have

come into existence as physical objects. It is important to textual studies in that an understanding of how a text has come into existence is fundamental to understanding the content of the text, but by itself it does not focus on textual content. Analytical bibliography has over the years consciously separated itself from the activity of enumerative bibliography, considered "mere listing." Bibliography as listing has, at the same time, remained a basic necessity of information organization in its larger social parameters, although its practitioners have often adopted other terms—for example, documentation or bibliographic control or resource discovery and access—as a way to refer to their task.

33. "Literature" is used here not in the sense of belles lettres but rather in terms of the totality of information objects produced and used by a given interconnected community of interest. It is not uncommon in the information field to think of the latter as clusters of scholars or specially trained personnel commonly identified with an academic or professional field of endeavor.

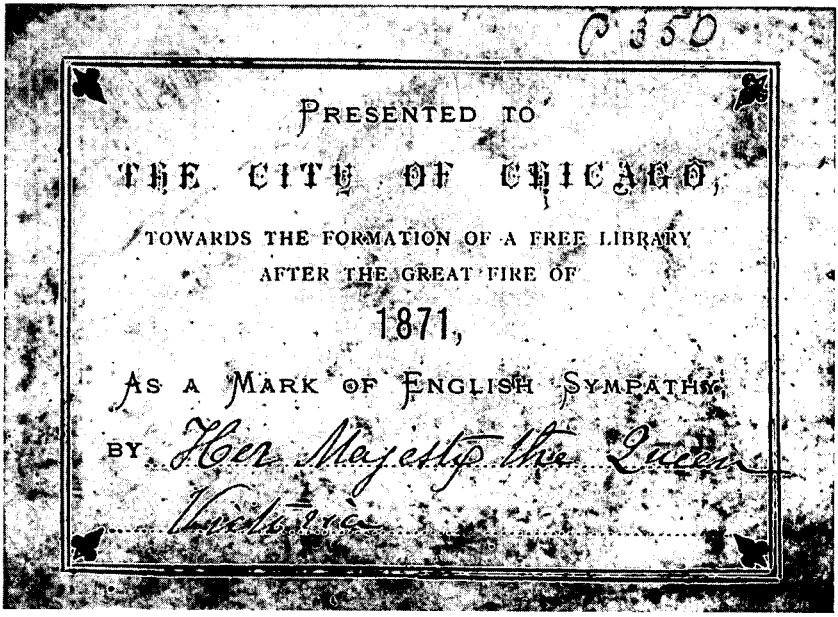
34. The idea of shoulder standing cannot be missed even in a cursory reading of the writings of documentalists during the 1930s, 1940s, and 1950s. This view also seems to be an important component of the views of Derek deSolla Price and of the Institute for Scientific Information, which eventually published the Science Citation Index.

35. In this respect it is interesting to observe the nature of at least some of the discussions associated with the creation of a national digital library of resources for science, mathematics, engineering, and technology education that is now over a decade old—for example, in terms of the original NSF-sponsored meetings about this initiative held in 1997 and published as *Developing a Digital National Library for Undergraduate Science, Mathematics, Engineering, and Technology Education: Report of a Workshop, National Research Council, Center for Science, Mathematics and Engineering Education* (Washington, D.C.: National Academy Press, 1998). Much of the general discussion of the workshop consisted of whether science education required the heavy and broad use of resources at all, since it commonly required students to learn fundamental, established formulae and ideas rather than to explore new ideas in a free-form manner. Subsequent development of the initiative since its beginning has struggled over this issue.

36. Jesse Shera, who earned his doctorate at the University of Chicago Graduate Library School in this period and whose work on the modern library movement was in some respects an exercise in demographics, was a demographer by occupation before he began his studies in the 1930s.

37. The term "information" was used in the period before the 1940s, but it shared the stage with other words that had their own long histories, most notably with the word "knowledge" as found in the formulation, for example, of "finding knowledge" (not "finding information").

38. It is interesting to try to trace the origins of a phrase such as "everyday information user" as found in Dervin's work and the work of her students. In some respects it appears to be a generalization from studies more strictly focused on urban populations and especially on minorities or disadvantaged groups of one kind or another. Regardless of its origins, however, it served to focus attention on people who had not previously been the center of user and use studies in the library and information field.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Cultural Record Keepers

The English Book Donation, Chicago Public Library

The Chicago Public Library officially opened to the public on New Year's Day of 1873. Key to the formation of the library was a notable gift from the British people that began an ongoing relationship between Chicago and the United Kingdom, a relationship that continues to the present day.

This story begins on the evening of October 8, 1871, when the Great Chicago Fire began to ravage the city. The fire broke out on the city's west side and spread rapidly for about thirty-six hours; approximately three and a half square miles of downtown Chicago burned. The destruction was almost complete and included the loss of all thirty thousand volumes of the Chicago Library Association, the city's largest subscription library.[1]

Bookplate courtesy of the Chicago Public Library, Special Collections and Preservation Division.

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Very soon after the disaster the world responded by sending generous donations of money, blankets, and clothing to the stricken city.[2] But the most lasting gift came to be known, ultimately, as the "English Book Donation." Working together, London businessman A. Hutton Burgess and Thomas Hughes, a member of Parliament and author of *Tom Brown's School Days,* recruited donations of books and other printed material for Chicago. Burgess and Hughes published a circular asking authors, publishers, and booksellers to contribute "a complete collection of modern works in all departments of literature. . . . The public generally, and especially the owners of large private libraries, the Heads of Societies, and the representatives of distinguished and historic names" were asked to donate "old books of all sorts" and also "money for purchasing rare works, so as to give completeness to the gift as a national act." London's Crystal Palace Company agreed to let its space be used to receive, classify, and pack the books for shipment to America.[3] In the Crystal Palace building John Robson, a Briton who had been the last director of the Chicago Library Association, organized the donations with great dedication.[4]

Eventually nearly eight thousand volumes arrived in Chicago.[5] A special bookplate, printed in black with a red border, designated each book as "a mark of English sympathy" and included the name of the donor. The list of donors is impressive. Queen Victoria donated *The Early Years of His Royal Highness the Prince Consort, 1819–1841* by Sir Charles Grey (London: Smith, Elder and Co., 1868). This volume was personally signed by the sovereign on a preliminary leaf.[6] (The bookplate shown here was placed in Victoria's donated book but does not bear her signature.) The Chicago Public Library accession books record Queen Victoria's gift as #3385, accessioned on April 11, 1873.

Many other prominent Britons contributed generously. Included among them was Prime Minister William E. Gladstone, who sent a volume of his collected speeches. Herbert Spencer donated his *Essays: Scientific, Political and Speculative,* and John Stuart Mill gave printed copies of his speeches on various subjects such as "The Subjection of Woman." Lewis Carroll gifted Chicago with copies of both *Alice's Adventures in Wonderland* and *Through the Looking-Glass and What Alice Found There.* Christina Rossetti donated *Goblin Market, and Other Poems,* and Charles Kingsley gave several works, including *Westward Ho!*[7]

Publishers and booksellers donated many volumes as well. Both the Oxford University Press and the Cambridge University Press contributed hundreds of handsome titles; British publishing houses also gave liberally, especially Macmillan and Company.[8] The most valuable single

donation was made by the Commissioners on Patents in London. This was a complete set of British patents, beginning in 1617.[9]

The impending book donation prompted leading citizens of Chicago to petition the mayor to call a public meeting to establish a free public library in Chicago.[10] This public meeting led directly to the Illinois Library Act of 1872, authorizing cities to establish tax-supported libraries throughout Illinois. On April 3, 1872, the Common Council of Chicago passed an ordinance officially founding the Chicago Public Library. The library formally opened its first home in a long-abandoned iron water tank at LaSalle and Adams Streets on January 1, 1873, with 3,157 volumes on its shelves.[11]

A century later the Chicago Public Library system had become one of the largest in the United States. The original eight thousand volumes of the English Book Donation had decreased because of attrition to approximately three hundred volumes, in addition to the set of British patents, still intact. Although originally intended as a circulating collection, the surviving volumes of the English Book Donation are now housed in locked glass cases in the central library. To commemorate the library's centennial in 1972 Queen Elizabeth II, great-great-granddaughter of Queen Victoria, donated a specially bound folio, *Buckingham Palace and Its Treasures* by John Harris (New York: Viking Press, 1968). This volume is signed by the queen, "Elizabeth R. 1972."

Another British book donation came in 1991 to coincide with the opening of Chicago's new central library, the Harold Washington Library Center. It consisted of classic children's books by British authors. These books became part of the Thomas Hughes Children's Library, located in the new central library.[12]

Celebrating the 150th anniversary of the British consulate in Chicago, Mayor Richard M. Daley accepted the 2005 British Book Donation from the consul general for the people of Chicago on June 24, 2005. Queen Elizabeth's gift was a rare, two-volume set entitled *Windsor Castle: An Architectural History* by W. H. St. John Hope (London: Country Life, 1913), signed by the queen.[13] The Chicago Public Library and the mayor reciprocated by sending Britain's monarch a unique copy of the *Encyclopedia of Chicago*, bound in full goatskin, enhanced by a bookplate designed and printed letterpress with an image of Chicago's Water Tower, which survived the 1871 fire and still stands on Michigan Avenue.

Accompanying the queen's gift was a history of Anglo-American relations from Prime Minister Tony Blair, signed by him, and fifty-six titles from members of Parliament who belong to the British-American Parliamentary Group. Completing the 2005 donation were nine hundred

of the best children's books of the twenty-first century, contributed by six British publishers; these volumes were dispersed among CPL branch libraries.[14] A large portion of the 2005 gift is held in the library's Special Collections and Preservation Division and is treasured as the latest of the British book donations.

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Notes

1. Gladys Spencer, *The Chicago Public Library: Origins and Backgrounds* (Chicago: University of Chicago Press, 1943), 250; T. D. Lowther, *Memorials of the Old Chicago Library, Formerly the Young Men's Association, and of the Advent of the New Chicago Library* (Chicago: John K. Scully, Printer, 1878), 83.

2. *Report of the Chicago Relief and Aid Society of Disbursement of Contributions for the Sufferers by the Chicago Fire* (Chicago: Printed for the Chicago Relief and Aid Society, at the Riverside Press, 1874), 338–41, 418–39.

3. Lowther, *Memorials*, 80, 81.

4. *The Chicago Public Library, 1873–1923: Proceedings at the Celebration of the Fiftieth Anniversary of the Opening of the Library, January First, Fourth and Sixth, 1923* (Chicago: Board of Directors, 1923), 19. The Chicago Public Library Archives hold extensive documentation not only of the English Book Donation but also of the mechanics of the gift, for example, packing and shipping the collection.

5. "The Public Library: Nearly Eight Thousand Volumes on the Shelves; Arrival of the English Authors' and Publishers' Contributions; of What They Consist—The Autographs on Some of the Title Pages," *Chicago Daily Tribune*, July 25, 1873.

6. Ibid.

7. Chicago Public Library accession books, vols. 1 and 2, Chicago Public Library Archives.

8. Ibid.

9. *The Chicago Public Library, 1873–1923*, 20.

10. Lowther, *Memorials*, 89.

11. *The Chicago Public Library, 1873–1923*, 22; "The Chicago Public Library: History of its Origin and Formation." *Chicago Librarian* 1, no. 2 (1873): 11.

12. "3rd British Book Donation," press release published by the British Consulate-General, Chicago, June 24, 2005.

13. Ibid.

14. Ibid.

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